CLAIMS

1. A superconducting material of formula $MgB_xSi_yC_z$ where X is a number in the range between 0 to 2, Y is a number in the range between 0 to 1 and Z is a number in the range 0 to 1, and where the sum of X, Y and Z is greater than or equal to 2.
2. A superconducting material in accordance with claim 1, where X is in the range between 1 to 2, Y is in the range between 0.05 to 0.5 and Z is in the range 0.1 to 0.3.
3. A superconducting material in accordance with claim 1, where X is in the range of 1.2 to 1.8, Y is in the range of 0.1 to 0.3, and Z is in the range 0.1 to 0.3.
4. A superconductor incorporating the superconducting material of claim 1, claim 2 or claim 3.
5. A method of synthesising the superconducting material of claim 1 comprising the step of utilising starting materials Mg, B, Si and C.
6. A method in accordance with claim 5, wherein the starting materials are in powder form.
7. A method in accordance with claim 6, wherein the powders consist of nanoparticles.
8. A method of synthesising the superconducting material of claim 1 comprising the step of utilising starting materials Mg, B and SiC.
9. A method in accordance with claim 8, wherein the starting materials are in powder form.
10. A method in accordance with claim 9, wherein the powders consist of nanoparticles.
11. A method of synthesising a superconducting material in accordance with claim 1 comprising the step of utilising starting materials MgB_2 and SiC or Si and C.
12. A method in accordance with claim 11, wherein the starting materials are in powder form.

13. A method in accordance with claim 12, wherein the powders consist of nanoparticles.

14. A method of producing a superconducting material, comprising the steps of adding silicon carbide to a superconducting material.

15. A method in accordance with claim 14, wherein the silicon carbide is added by way of substitution.

16. A method in accordance with claim 14, wherein the silicon carbide is added by way of addition.

17. A superconducting material including a silicon carbide codopant.

18. A superconducting material of the formula of formula $MgB_xTi_yC_z$ where X is a number in the range between 0 to 2, Y is a number in the range between 0 to 1 and Z is a number in the range 0 to 1, where the sum of X, Y and Z is greater than or equal to 2, and X is greater than 0.

19. A method of manufacturing a material capable of functioning as a superconductor, comprising the steps of,
- mixing elemental magnesium and elemental boron with an amount of one or more of the group comprising silicon carbide and titanium carbide, and
- heating the powders to sinter the powders into a material capable of functioning as a superconductor.

20. A method of manufacturing a material capable of operating as a superconductor, comprising the steps of,
- mixing elemental magnesium and elemental boron with an amount of one or more of the group comprising elemental silicon, elemental carbon and elemental titanium, and
- heating the mixture to sinter the mixture into a material capable of functioning as a superconductor.

21. A method in accordance with claim 20, wherein the mixture is heated to a temperature in the range between 650° to 2000°.
22. A method in accordance with claim 20, wherein the mixture is heated to a temperature in the range of 900-950°C.
23. A method in accordance with claim 20, wherein the elements are provided in a powder form.
24. A method in accordance with claim 23, wherein the powders consist of nanoparticles.
25. A method in accordance with claim 20, wherein the powders are groove-rolled into a tube manufactured from a material of one or more of the group comprising iron (Fe), copper (Cu), nickel (Ni) and stainless steel prior to heating the mixture.
26. A method in accordance with claim 20, comprising the further step of cooling the resultant material to the temperature of liquid nitrogen, to render the material capable of superconducting.